

A RAPID EFFECT OF HANDLING ON COUNTS OF WHITE BLOOD CELLS IN A WINTERING PASSERINE BIRD: A MORE PRACTICAL MEASURE OF STRESS?

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ABSTRACT

Measuring circulating glucocorticoids is a widely used method to assess stress in animals. However, hormones must be sampled within the first few minutes of capture, which makes it difficult to discriminate between hormone baseline levels and the levels caused by environmental stress. The use of white blood cell counts made from blood smears represents an alternate method for measuring physiological stress. Since the increase in glucocorticoid hormones causes characteristic long-lasting changes in the leukocyte numbers, we tested whether stress related handling of male great tits (*Parus major*) may cause rapid changes in their leukocyte profile. We found that handling stress significantly increased heterophil counts already between 30 and 60 min after capture, while lymphocyte and eosinophil counts significantly declined between 60 and 120 min after capture. The increase in heterophil counts and reduction in lymphocyte counts caused an increase of heterophil and lymphocyte ratio (H/L) between 60 and 120 min after capture. Overall these results indicate that leukocyte profiles in wintering male great tits may change more rapidly than previously thought, reflecting the condition of acute stress of individual birds.